Comment: This is another report documenting a high rate of new ischemic foci after carotid artery stenting. Clearly, there is room for improvement in the design of neuroprotection devices as adjuncts to carotid artery stenting.

Familial thoracic aortic aneurysms and dissections--incidents, modes of inheritance, and phenotypic patterns

Albornoz G, Coady MA, Roberts M, et al. Ann Thorac Surg 2006;82: 1400-6.

Conclusion: Thoracic aortic aneurysms (TAAs) are frequently familial, with an autosomal dominant pattern of inheritance and a growth rate higher rate than that in nonfamilial TAAs.

Summary: The authors studied phenotypic and genetic patterns of TAAs and dissections. The authors identified 520 patients with TAA and examined their pedigrees to identify family members with aneurysms. Patients were examined for age of presentation, familial clustering of aneurysms, rate of aneurysm growth, and hypertension as well as a correlation of aneurysm sites among kindred and pedigree inheritance patterns.

There was an inherited pattern for TAA in 21.5% of non-Marfan patients. This pattern was primarily autosomal dominant (76.9%), with varying degrees of expression and penetrance. Patients with familial TAAs were younger than those with sporadically occurring TAAs ($P < .0001$), but was not as young as the Marfan patients (mean age, 58.2 vs 65.7 vs 27.4 years, $P < .001$. There were 197 patients with kindred aneurysms and TAA was present in 131 (66.5%). Abdominal aortic aneurysms (AAA) were present in 49 patients (24.9%), and 17 (8.6%) had either cerebral or other aneurysms. Hypertension and AAA were associated more with descending than ascending TAA ($P < .001$). The highest rate of aortic growth occurred in the patients with a familial pattern of TAA (0.21 cm/year). Growth was intermediate in patients with sporadically occurring TAA (0.16 cm/year). Aneurysm growth was lowest in the Marfan patients (0.1 cm/year, $P < 0.01$).

Comment: A familial pattern of AAA has been long recognized. Surprisingly, relatively few previous studies have examined familial predisposition to TAA and thoracic aortic dissection. The important points of this article are that many TAAs and dissections are familial (20% of non-Marfan patients). In addition, patients with a familial pattern of TAA have a higher rate of aneurysm growth than those with sporadic disease. The data suggest screening for aneurysm disease in first-order relatives and probans of patients with TAA

Management and hospital outcomes of blunt renal artery injuries: Analysis of 517 patients from the national trauma data bank

Sangthong B, Demetrios D, Martin M, et al. J Am Coll Surg 2006;203: 612-7.

Conclusion: Nonoperative management is an acceptable therapeutic option for blunt renal artery trauma.

Summary: Blunt injuries to the renal artery are rare. The authors sought to evaluate current therapeutic approaches to blunt renal artery trauma, with emphasis on the effect of various therapies and on hospital outcomes. Data from the National Trauma Data Bank were reviewed. Patients with blunt trauma admissions who had renal artery injuries were included. Data analyzed included patient demographics, Injury Severity Score, Abbreviated Injury Severity Score for each body area, mechanism of injury, type of management of blunt renal artery trauma (arterial reconstruction, nephrectomy, or observation), and in-hospital outcomes, including intensive care unit stay, total hospital days, and mortality. The relationship between type of management and hospital outcome was examined with multiple and logistic regression analysis.

The database included 945,326 blunt trauma admissions, of which only 517 (0.05%) had documented injuries to the renal artery. In 373 patients (73%), the kidney was not explored. Immediate nephrectomy was performed in 95 patients (18%), and 45 (9%) underwent surgical revascularization. In 87 (17%) of the 517 patients with renal artery injury, renal artery injury was the only intra-abdominal injury. Of these, 73 (84%) were treated nonoperatively, and seven (8%) had early nephrectomy. Longer hospital stays were associated with surgical revascularization and nephrectomy. Surgical revascularization was also associated with longer intensive care unit stay.

Comment: The rarity of blunt renal artery injury, time constraints, complexity of repair, and reported poor outcomes (Tech Urol 1998;4:1-11) all combine to make repair of the blunt renal artery injury a rare event. Nevertheless, in appropriately stable patients, a renal artery injury to a single functioning kidney or bilateral renal artery occlusion after blunt trauma should be considered for repair in an attempt to avoid permanent dialysis.

Vessel wall calcifications with multi-detector row CT angiography in patients with peripheral arterial disease: Effect on clinical utility and clinical predictors

Ouwendijk R, Kock MCJM, van Dijk LC, et al. Radiology 2006:241;603-8.

Conclusions: The clinical utility of computed tomography CT angiography (CTA) is decreased by vessel wall calcification. Vessel wall calcification is predicted by the presence of diabetes, cardiac disease, and increased age.

Summary: CTA is an alternative to magnetic resonance angiography and contrast angiography for evaluation of peripheral arterial disease. Modern CT scanners with improved multidetector row technology have lower dose requirements of contrast medium, improved spatial resolution of small arterial branches, shorter acquisition times, and increased volume coverage. A potential drawback of CTA, however, is calcification. Calcification of arterial walls, particularly in small arteries, can result in high attenuation artifacts leading to a false-positive diagnosis of stenosis and to false-negative findings of patency. The authors sought to evaluate the effect of vessel wall calcification on the clinical utility of CTA and identify predictors of vessel wall calcification.

This was a retrospective study of patients from randomized trials evaluating the cost of diagnostic imaging of patients with peripheral arterial disease. The clinical utility of CT angiograms was measured using a rating of therapeutic confidence (10-point scale) and need for additional vascular imaging. The effect of vessel wall calcification on the clinical utility of CTA and patient characteristics correlating with the number of calcified segments on CTA were determined.

The study included 145 patients (mean age 64 years, 70% men). The number of calcified segments predicted confidence scores ($P < .001$) and need for additional imaging ($P = .001$). It was possible to discriminate between patients who required additional imaging after CTA by the number of calcified segments. Age >84 years, cardiac disease, and diabetes predicted increased numbers of calcified segments ($P < .05$).

Comment: All imaging techniques have advantages and disadvantages. A clear disadvantage of CTA is the evaluation of small, heavily calcified arteries. The study suggests that despite its lower costs and noninvasive nature, other forms of arterial imaging such as magnetic resonance angiography or contrast angiography should be considered in patients with diabetes, heart disease, and advanced age who require operative intervention of smaller arteries.

Acute limb ischemia associated with type B aortic dissection: Clinical relevance and therapy

Henke PK, Williams DM, Upchurch GR Jr, et al. Surgery 2006;140:532-40.

Conclusion: In patients with aortic dissection, both death and visceral ischemia are associated with acute limb ischemia. Excellent limb salvage can be achieved with endovascular therapy, which also allows diagnosis of previously unsuspected visceral ischemia.

Summary: The authors sought to characterize presentation, therapy, and outcomes of patients with type B aortic dissection and acute limb ischemia. Data from the prospective/retrospective International Registry for Acute Aortic Dissection (IRAD) and from the University of Michigan were queried for all patients with type B aortic dissection from 1996 to 2002. The IRAD Database contained 458 patients (70% men) with a mean age of 64 years. Overall mortality was 12%; and of these, 6% had acute limb ischemia. Pulse deficits and neurologic deficits were more common in patients with acute limb ischemia after aortic dissection than in those without acute limb ischemia ($P < .001$). There was no difference in age, race, gender, or origin of the dissection in the patients with type B dissection and acute limb ischemia vs those with type B dissection without limb ischemia.

Acute limb ischemia in patients with type B aortic dissection was associated with an increased risk of acute renal failure (odds ratio [OR], 2.7; 95% confidence interval [CI], 1.1 to 7.1; $P = .48$), acute mesenteric ischemia or infarction (OR, 6.9; 95% CI, 2.5 to 20; $P < .001$); and, when adjusting for patient characteristics, was also associated with death (OR, 3.5; 95% CI, 1.1 to 20; $P = .02$). There were similar patient demographics and mortality in 93 patients with acute type B dissection analyzed during the same period at the University of Michigan, with 28 patients also having acute limb ischemia. Aortic fenestration or aortic iliac stenting were used to treat 93% and surgical bypass was used in 7%. At a mean of 18 months, limb salvage was 93%. Impaired organ system perfusion was two times higher at angiography than was clinically suspected before angiography ($P = .002$).

Comment: The main points to be taken from this report are that endovascular therapy works well for treatment of acute limb ischemia in patients with type B aortic dissection and other unsuspected areas of impaired organ perfusion will be discovered at the time of aortography.